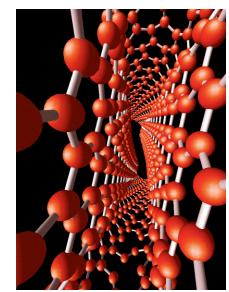
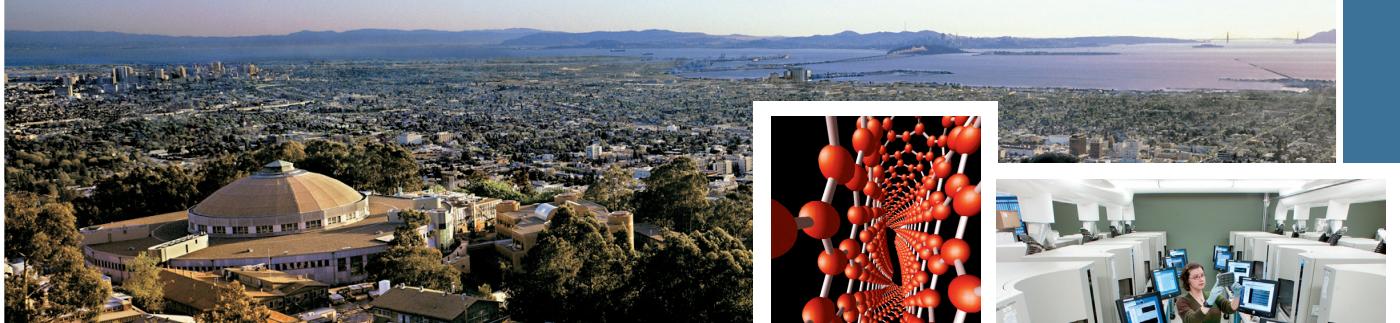




LAWRENCE BERKELEY NATIONAL LABORATORY



ABOUT BERKELEY LAB

The Lawrence Berkeley National Laboratory (Berkeley Lab) was founded in 1931 by Ernest O. Lawrence, who won the Nobel Prize in physics in 1939 for his invention of the cyclotron. Lawrence's invention led to a Golden Age of particle physics and revolutionary discoveries about the nature of the universe.



Under the stewardship of the University of California, who manages the Lab for the Department of Energy's Office of Science, Berkeley Lab has evolved from the birthplace of nuclear science and medicine into a multidisciplinary research facility advancing the forefront of scientific knowledge and addressing problems of national and global concern. Today, Berkeley Lab performs research in nanoscience and advanced materials, life sciences, computing, energy and earth sciences, physics and cosmology. The Lab also operates a Homeland Security office dedicated to leveraging fundamental scientific research to develop methods to help ensure homeland safety.

Since its inception, Berkeley Lab's location on the hillside above the University of California at Berkeley has offered a unique opportunity for scientific and academic partnerships and has helped to foster the academic excellence that is the hallmark of the Lab's scientific endeavors. Of Berkeley Lab's approximately 4,000 employees, more than 250 faculty/scientists hold joint appointments with UC Berkeley

and other UC campuses. In addition, nearly 800 students, both graduate and undergraduate, are employed each year, working aside more than 2,000 participating guest researchers from institutions around the world.

With an annual budget of more than \$521 million, Berkeley Lab has a sizable regional economic impact as one of the 15 largest employers in the East Bay. The Lab interacts with the private sector in a growing number of collaborative research projects intended to transfer research know-how into the national economy. A number of corporations supply both funding and expertise for many joint projects that range from building the next generation of semiconductors to developing new tests for heart disease risk.

MAJOR USER FACILITIES

In addition to its fundamental research, Berkeley Lab's research centers and user facilities provide

unique intellectual resources, services, infrastructure and experimental facilities to researchers from around the world. They include:

Advanced Light Source (ALS) — The ALS produces some of the world's brightest "soft" X-ray and ultraviolet light allowing materials scientists to use it as a probe that can focus on surface areas only a few hundred atoms in diameter. Researchers can freeze-frame lightening-fast chemical reactions and peer deep inside living cells.

National Energy Research Scientific Computing Center (NERSC) — One of the most powerful unclassified computing centers in the country, NERSC's supercomputers are capable of investigating problems of vast complexity, producing remarkably detailed models. Instruments like electron microscopes and the ALS can now be tied into far-flung user networks, extending the power of supercomputers to scientists everywhere.

The Energy Sciences Network (ESnet) — A high-speed network serving thousands of Department of Energy scientists and collaborators worldwide, Esnet is a pioneer in providing high-bandwidth and reliable connections, enabling researchers at national laboratories, universities and other institutions to communicate with one another to address some of the world's most important scientific challenges.

National Center for Electron Microscopy (NCEM) — The center provides scientific researchers with essential resources for electron beam microcharacterization of materials. NCEM houses several of the world's most advanced microscopes.

The Joint Genome Institute (JGI) — A multi-purpose genome sequencing and research center, JGI brings together the research capabilities of three national laboratories operated by the University of California: Berkeley Lab, Lawrence Livermore, and Los Alamos. JGI's scientific mission encompasses comparative, functional, and evolutionary genomics, shedding light on many natural processes that support life on our planet.

SIGNIFICANT DISCOVERIES AND INVENTIONS

In the spirit of Lawrence's pioneering work, Berkeley Lab's discoveries and inventions continue to challenge the very edges of scientific frontiers. Among recent highlights are:

- Discovery of a mysterious "dark energy" that acts like an antigravity force compelling the universe to expand forever.
- Demonstration of an important link between the development of breast cancer and a network of proteins surrounding breast cells called the extracellular matrix.
- Key roles in the Sudbury Neutrino Observatory and KamLAND neutrino experiments.
- Invention of the asymmetric collider concept used as the basis for the B factory, to help determine why matter supplanted antimatter in the creation of our universe.
- Discovery of two genes responsible for the development of asthma
- Isolation of lipoproteins revealing that the ratio of high-density to low-density lipoproteins is a strong indicator of heart disease risk
- Development of the mouse model that allows testing of experimental treatments for human sickle cell and other diseases.
- Creation of the world's smallest electrical switch, consisting of a single Buckyball molecule.
- Pioneering work on the human genome.

NOBEL LAUREATES: Berkeley Lab has nine Nobelists, five in physics and four in chemistry.

NATIONAL MEDALS OF SCIENCE: Since Luis W. Alvarez first won a National Medal of Science in 1963, the laboratory has gone on to win a total of 12 medals, the nation's highest award for lifetime achievement in fields of scientific research. Most recently, Marvin Cohen and Gabor Somorjai received the award in 2002. In addition, lab researchers have garnered 3 Fermi Awards and 25 Lawrence Awards.